

Fig. 1

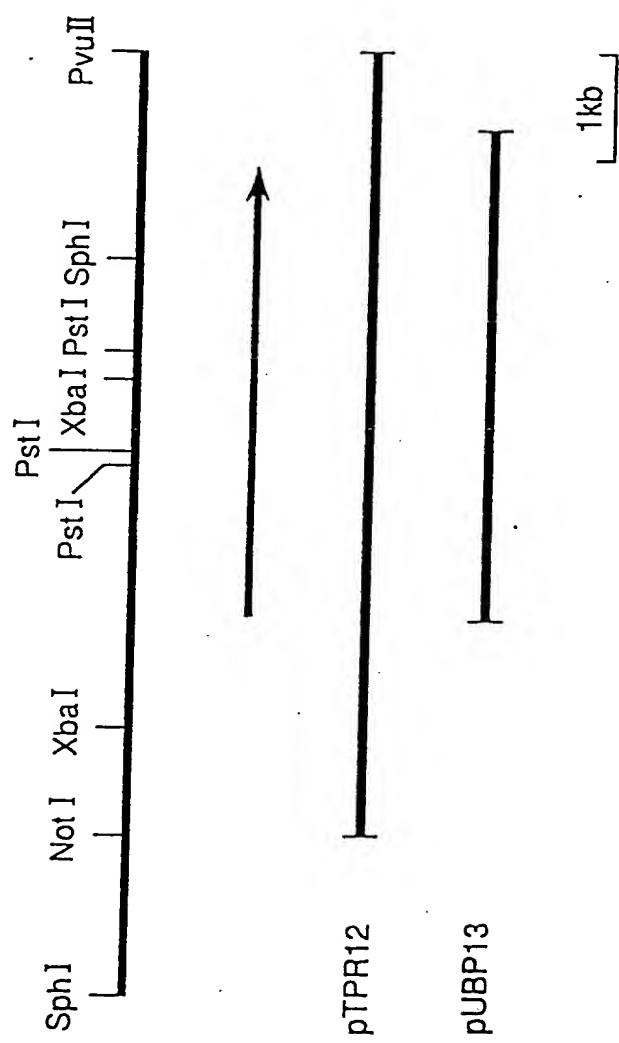


Fig. 2

170 175 180  
Asp Gly Ser Gly Val Val Val Ala Val Leu Asp Thr Gly Val  
5'-GAT GGT AGT GGT GTT GTT GCA GTA CTT GAC ACG GGA GTT-3'

PRO-1F 5'-GGW WSD RRT GTT RRH GTH GCD GTD MTY GAC ACB GG-3'

TOP SECRET//NOFORN

Fig. 3

365 370 375  
His Gly His Gly Thr His Val Ala Gly Thr Val Ala Gly Tyr  
5'-CAC GGT CAC GGA ACT CAC GTA GCT GGA ACT GTT GCT GGT TAC-3'

PRO-2F 5'-KST CAC GGA ACT CAC GTD GCB GGH ACD GTT GC-3'

PRO-2R 3'-GTG CCT TGA GTG CAH CGV CCK TGH CAA CGM CSA-5'

Fig. 4

590 595  
Ser Gly Thr Ser Met Ala Thr Pro His Val Ser Gly Val Val  
5'-TCT GGA ACT TCG ATG GCT ACT CCA CAT GTC AGC GGT GTC GTT-3'

PRO-4R 3'-CCD TGV AGB TAC CGD WGA GGB GTR CAV YSG CCH C-5'

Fig. 5

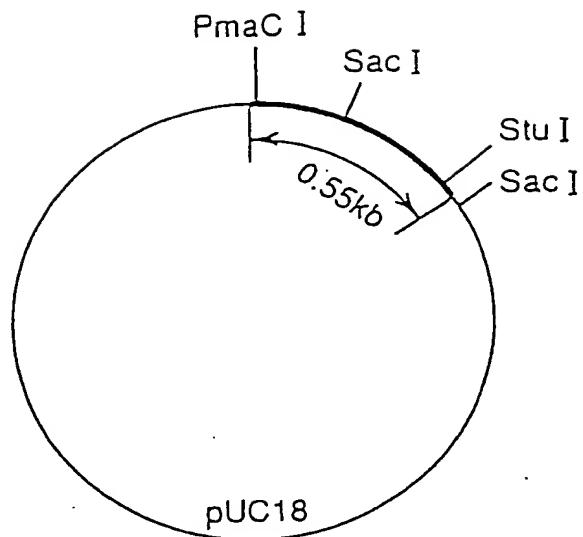


Fig. 6

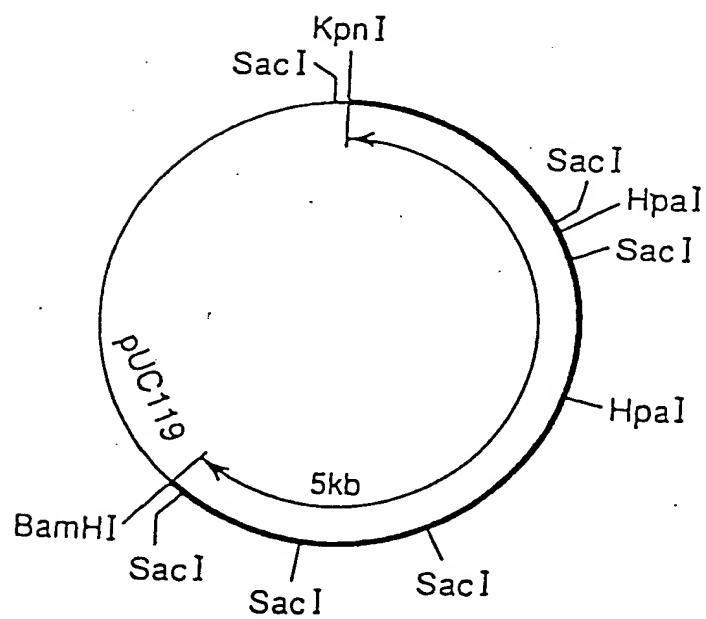


Fig. 7

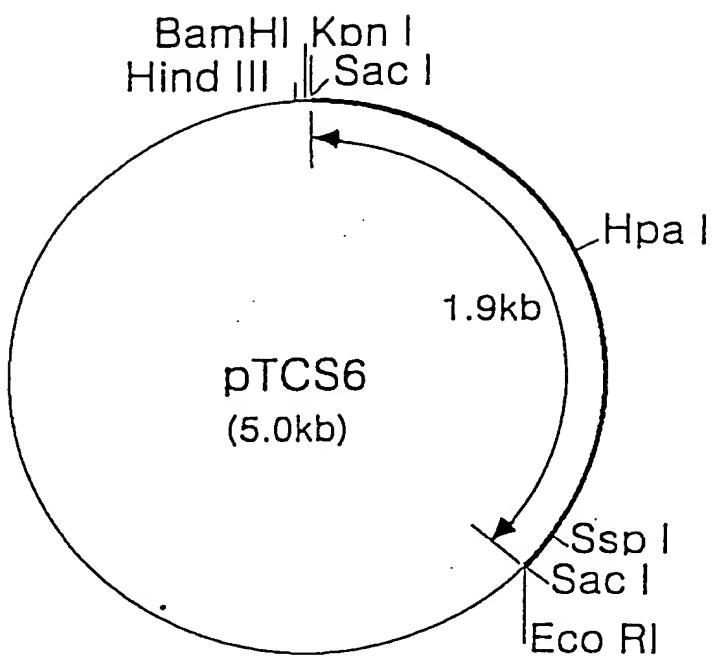
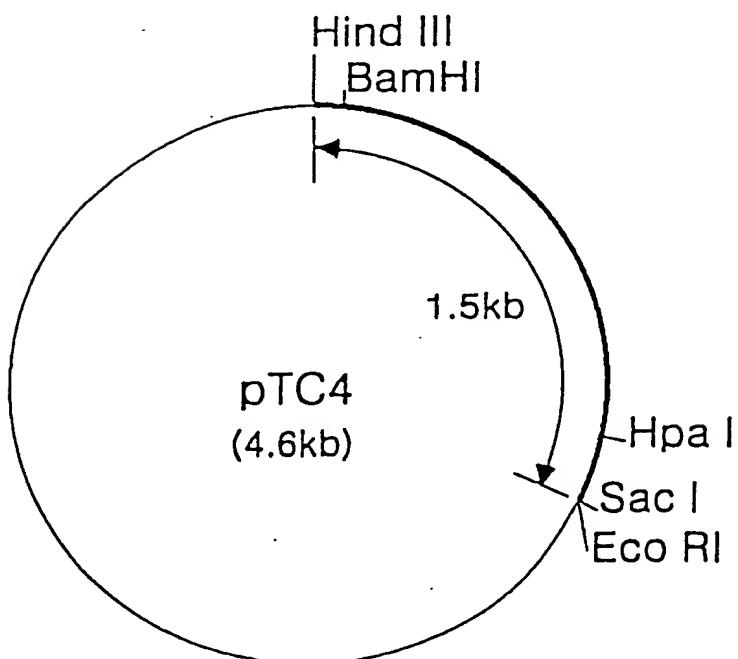
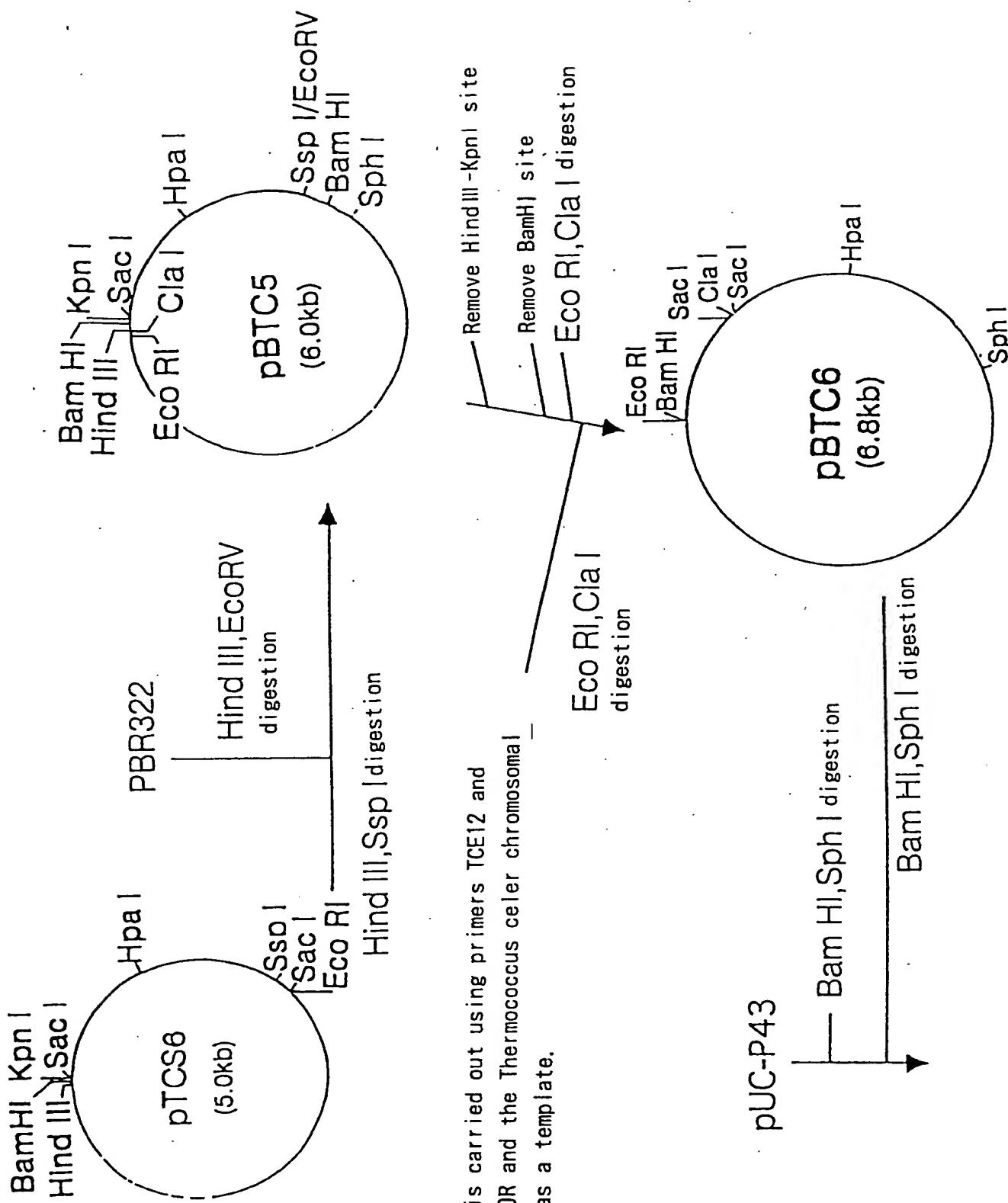


Fig. 8





✓ 21

Fig. 9 (Cont'd)

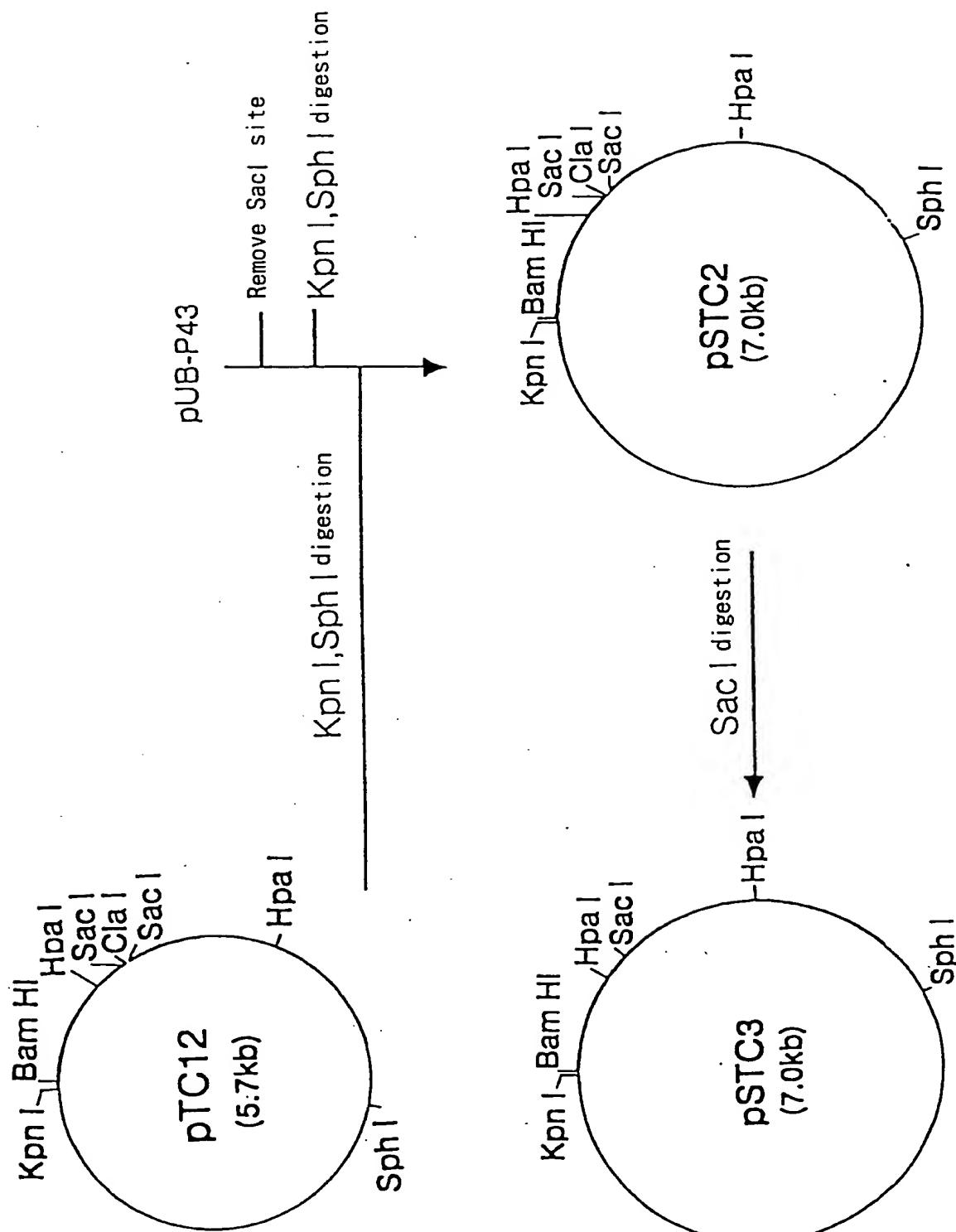
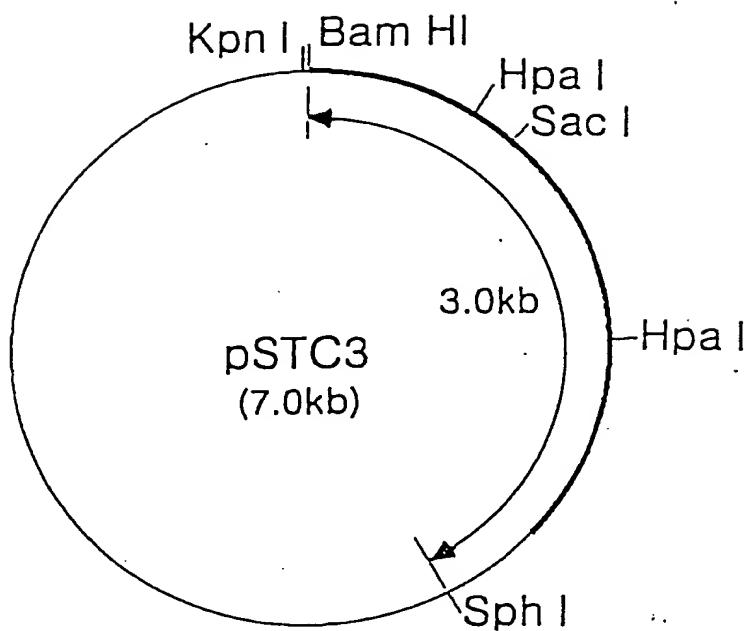


Fig. 10



PFUL	MNKKGLTVLF	10	20	30	40	50
TCES	MKRLGAVV					
SUBTILISIN						
PFUL	VSQAALNAIM	60	70	80	90	100
TCES	NYGLLTPGLF	KGQPNMVLII	KTKEGKLEEA	KTELEKLGAE	ILDENRVLNM	
SUBTILISIN	LFALALIFTM	KKVQRMNWNQ	EVDTVIMFGS	YGDRRDRAVKV	LRLMGAQVRY	
PFUL	SEKGGKVQKQ	AGGSTSSAQA	AGKSNGEKKY	IVGFKQTMT	MSAAKKKDVI	
TCES						
SUBTILISIN						
PFUL	LLVKIKPEKV	110	120	130	140	150
TCES	SYKIIIPAVV	KELNYISSL	KAWLNRREVKL	SPPIVEKDVK	TKEPSLEPKM	
SUBTILISIN	SEKGGKVQKQ	KIKARDLLI	AGMIDTGYFG	NTRVSGIKFI	QEDYKVQVDD	
PFUL	YNSTTWVINAL	160	170	180	190	200
TCES	ATSVSQIGAD	QFIQEF <del>FGYDG</del>	<del>SGVTVVAVIDT</del>	<del>GVDPNHPFES</del>	ITPDGRRKII	
SUBTILISIN	VPYGVQSQIKA	TVWN <del>S</del> LG <del>YDG</del>	<del>SGVTVVAVIDT</del>	<del>GIDANHPDLK</del>	GKVIGWYDAV	
PFUL	EWKDFTDEGF	210	220	230	240	250
TCES	NGRSTPYDDQ	VDTSSFSSKV	VNGTLLINTT	FQVASGLTLN	ESTGLMEYVV	
SUBTILISIN	ETNPFQDNN-	-----	-----	-----	-----	
PFUL	RTVYVSNVTI	260	270	280	290	300
TCES	GNITSANGIY					
SUBTILISIN						

PFUL	310	320	330	340	350
TCES	GNGYDIAYVD	TDLDYDFTDE	VPLGQYNVTY	DVAVFSYYYG	PLNYVLAEID
SUBTILISIN	-----	-----	-----	-----	-----
PFUL	360	370	380	390	400
TCES	PNGEYAVFGW	DGHGHGTHVA	GTVAGYDSNN	DAWDWLMSYS	GEWEVFSRLY
SUBTILISIN	-----	-----	-----	-----	-----
PFUL	410	420	430	440	450
TCES	GWDYTNVITTD	TVOGVAPGQAQ	IMAIRVLRSD	GRGSMWMDITE	GMTYAATHGA
SUBTILISIN	-----	-----	-----	-----	-----
PFUL	460	470	480	490	500
TCES	---DVISMS	IGGNAPYILDG	TDPESSVAVDE	LTEKYGVVFV	IAAGNEGPGI
SUBTILISIN	KYGIIRVINIS	IGSSQSS-DG	TDSSLSQAVNN	AWDA-GIVVC	VIAGGNSCPNT
PFUL	510	520	530	540	550
TCES	N--IVGSPGV	ATKAITVGA	AVPINVGVVY	SQLGYPDYY	GFYYFPAYTN
SUBTILISIN	Y--TVGSPAA	ASKVITVGA	DSNDN-----	-----	-----
PFUL	560	570	580	590	600
TCES	SSSTVGYPGK	YPSVIAVGA	DSSNQ-----	-----	-----
SUBTILISIN	-----	-----	-----	-----	-----

GTSMATPHYS	610	GVVALLISGA	620	KAEGIYYNPD	630	IIKKVLESGA	640	TWIEGDPYTG	650
GTSMATPHYS		GVAAHLIQAE		PSWTFDKVKT		---ALIETA		DIVAPKEIAD	
GTSMASPHVA		GAALILSKH		PNWINTOVR		---SILENT		6K1-GDS---	

PFUL  
TCES  
SUBTILISIN

QKYTELDDQGH	GLVNVT <del>K</del> SWE	ILKAI <del>N</del> GTTI	PIVDHWADKS	YSDFAEYLGV	700
-----IAYGA	GRV <del>N</del> VY <del>K</del> AIK	YDDYAKL <del>T</del> FT	GSVADKG <del>S</del> AT	HTFDVSGATF	
-----FYYGK	GLINVQAAAQ	*			

## PEFUL TCEs SUBTILISIN

DVIRGLYARN	710	SIPDIVEWHI	KYVGDTTEYRT	FEIYATEPWI	KPFVSGSVIL	750
VTATFLYWDTG	720	SSDIDLLYLD	PNGNEVDYSY	TAYYGFKEKVG	YYNPTAGTWT	740

TCS 101

ENNTEFVLRV KYDVEGLEPG LYVGRRIIDD PTTPVIEDI LNTIVIPEKF  
VKVTVSYKGAA NYQVDVVSVDG SLSQSSGGNP NPNPNPNEPP TTDTOTETGS

PREFACES

TPENNYTLTW YDINGPEMVT HHFFFTVPEGV DVLYAMTTYW DYGLYRPDGM  
VNDIWDTSIT FTMANVNSGAT KITGDLTFT SYNDLILY DPNGNLYVDRS  
810 820 830 840 850

APPENDICES

860	870	880	890	900
FVFPYQLDYL	PAAVSNPPMPG	NWELVWTGFN	FAPLYESGFL	VRIGVVEITP
TSSMSYEHVE	YANPAPGTWT	FLVYAYRTYG	WADYQOLKAWV	YYG*

四

SVWYINRTYL DTNTEFSIEF NITNIYAPIN ATLPIGLGT YMASVESVGD  
910 920 930 940 950

REFUT.

PFUL	960	GEFFIKGIEV	PEGTAELKIR	IGNPSVPNSD	LDLYLYDSKG	NLVALDGNPT	1000
PFUL	1010	AEEEVVVEYYP	KPGVYSSIVVH	GYSVRDENGN	PTTTTFDLVV	QMTLDNGNIK	1050
PFUL	1060	LDKDSIILGS	NESVVVTANI	TIDRDHPTGV	YSGIIIEIRDN	EVYQDTNTSI	1100
PFUL	1110	AKIPITLVID	KADFAVGLTP	AEGVLGEARN	YTLLIVKHALT	LEPVVPNATVI	1150
PFUL	1160	IGNYTYLTDE	NGTVTFTYAP	TKLGSDEITV	IVKKKENNTL	EKTFQITVSE	1200
PFUL	1210	PEITEEDINE	PRLAMSSPEA	NATIVSVEME	SEGGVKKTVT	VEITTINGTAN	1250
PFUL	1260	ETATIVVPVP	KKAENIEVSG	DHVISYSIEE	GEYAKYVIT	VKFASPVTVT	1300
PFUL	1310	VTYTYAGPR	VSLTILNFLG	YSWYRLYSQK	FDELYQKALE	LGVDNETLAL	1350
PFUL	1360	ALSYHEKAKE	YYEKALELSE	GNIIIQYLGDI	RLLPPLRQAY	INEMKAVKIL	1400
PFUL	1410	EKAIEELEG	E*				

Fig. 13

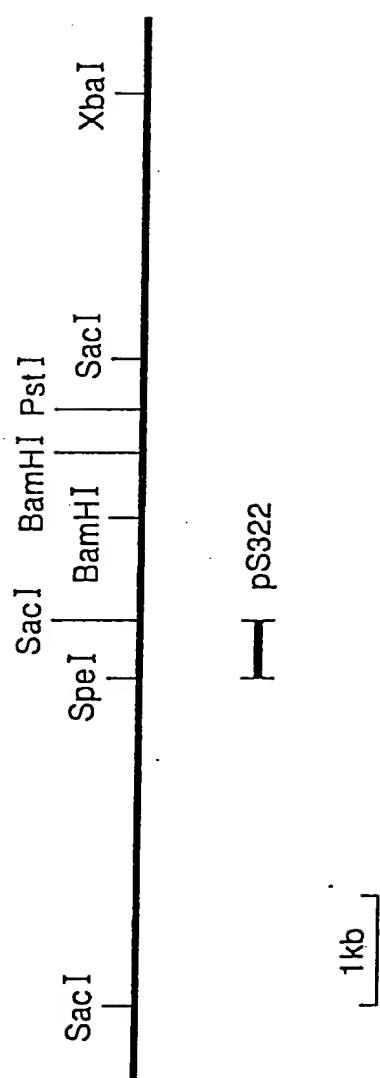


Fig. 14

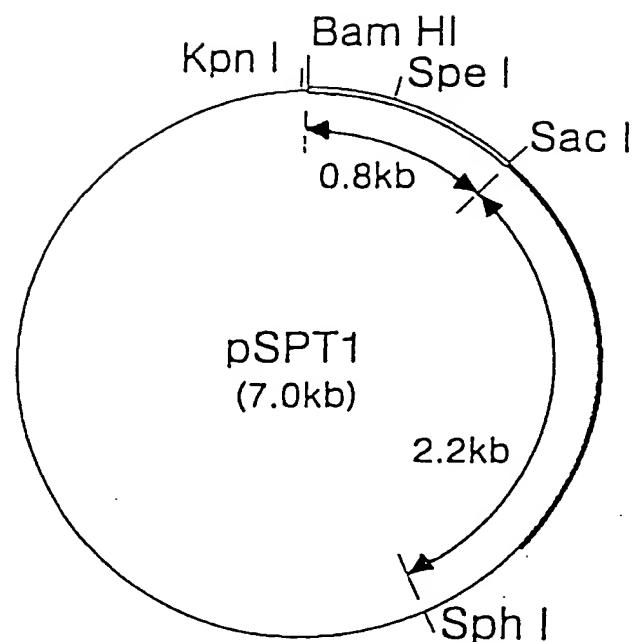


Fig. 15

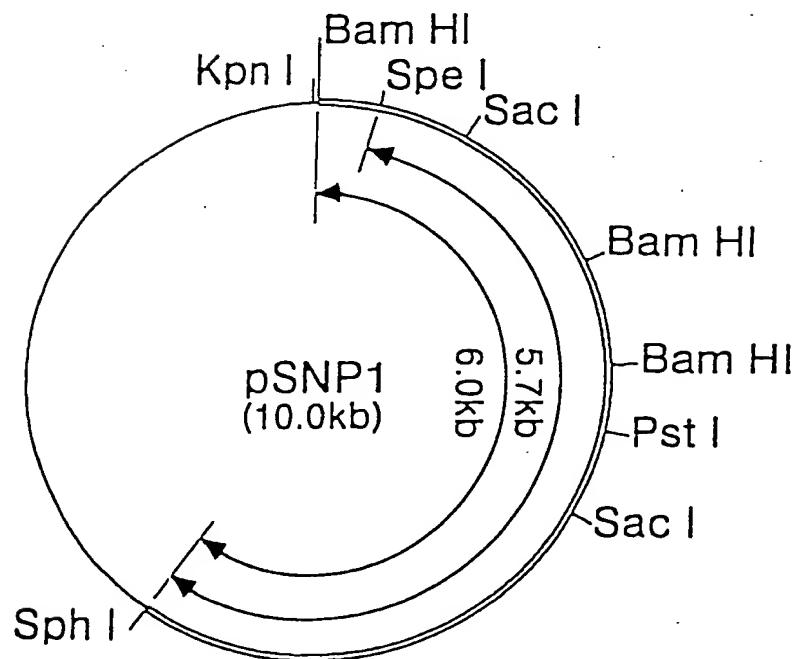


Fig. 16

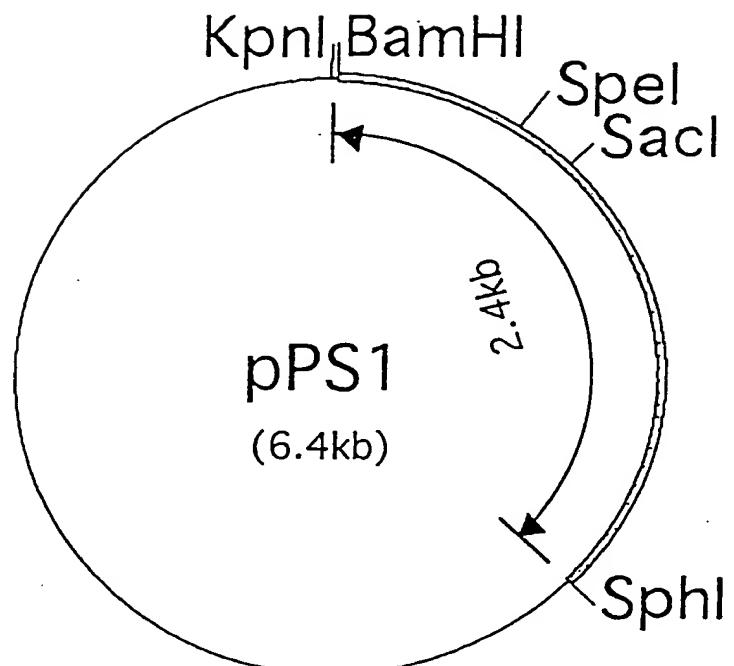


Fig. 17

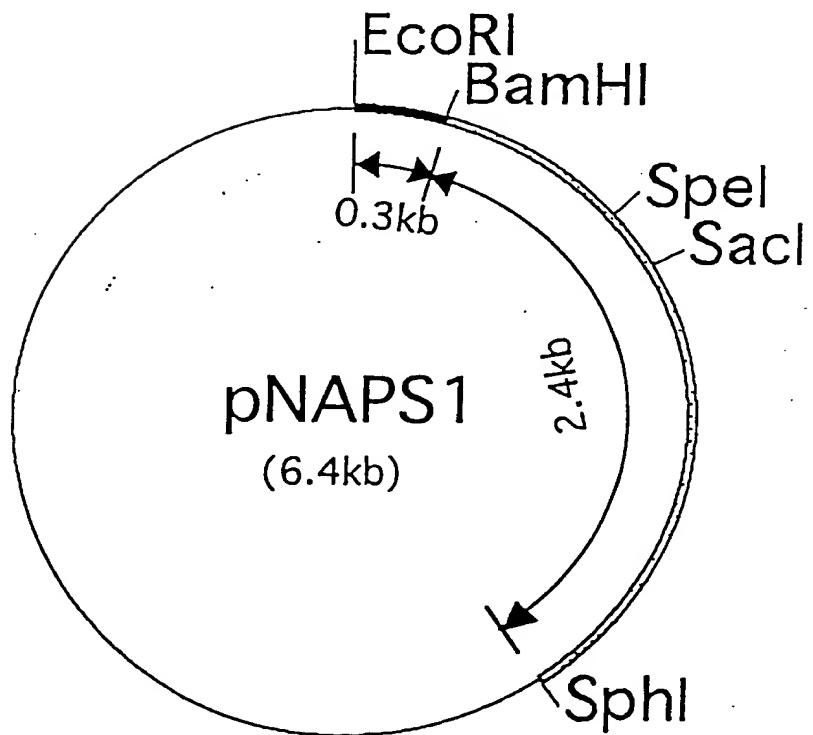


Fig. 18

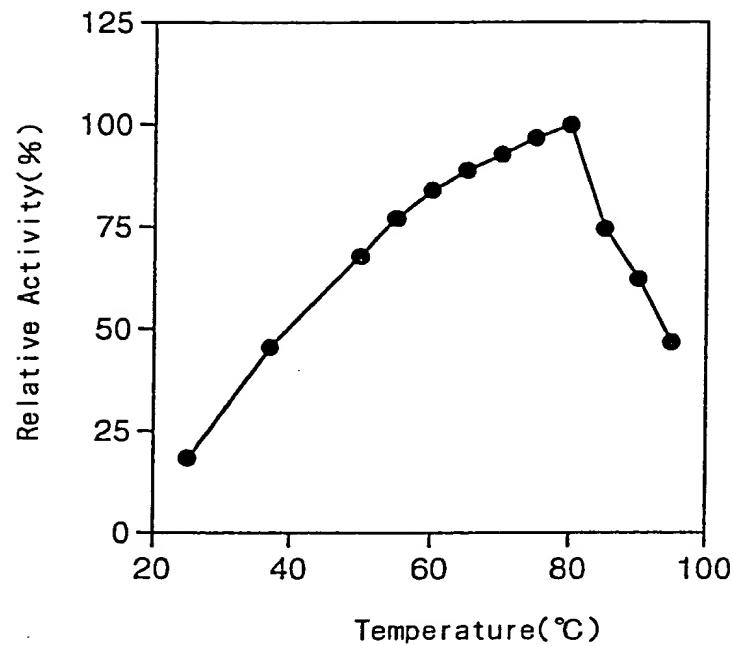


Fig. 19

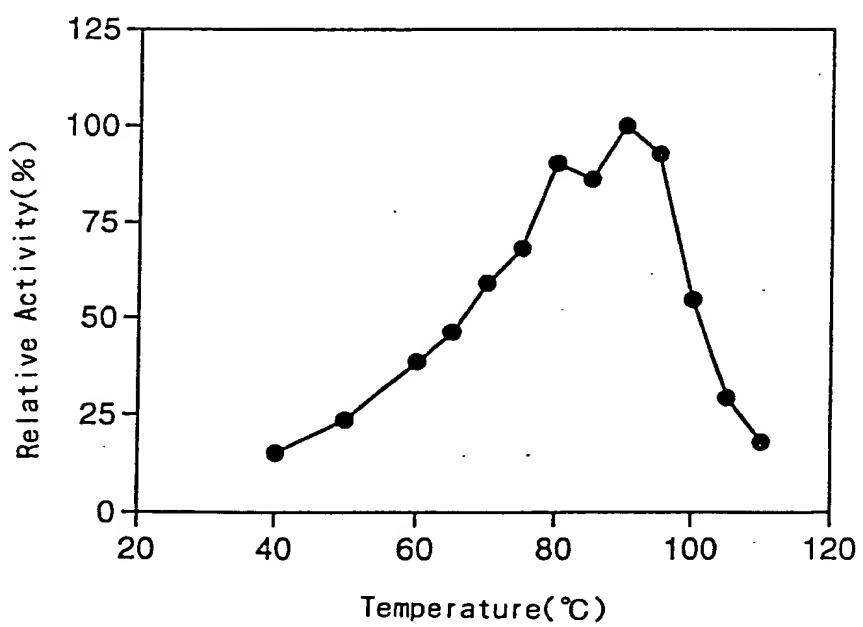
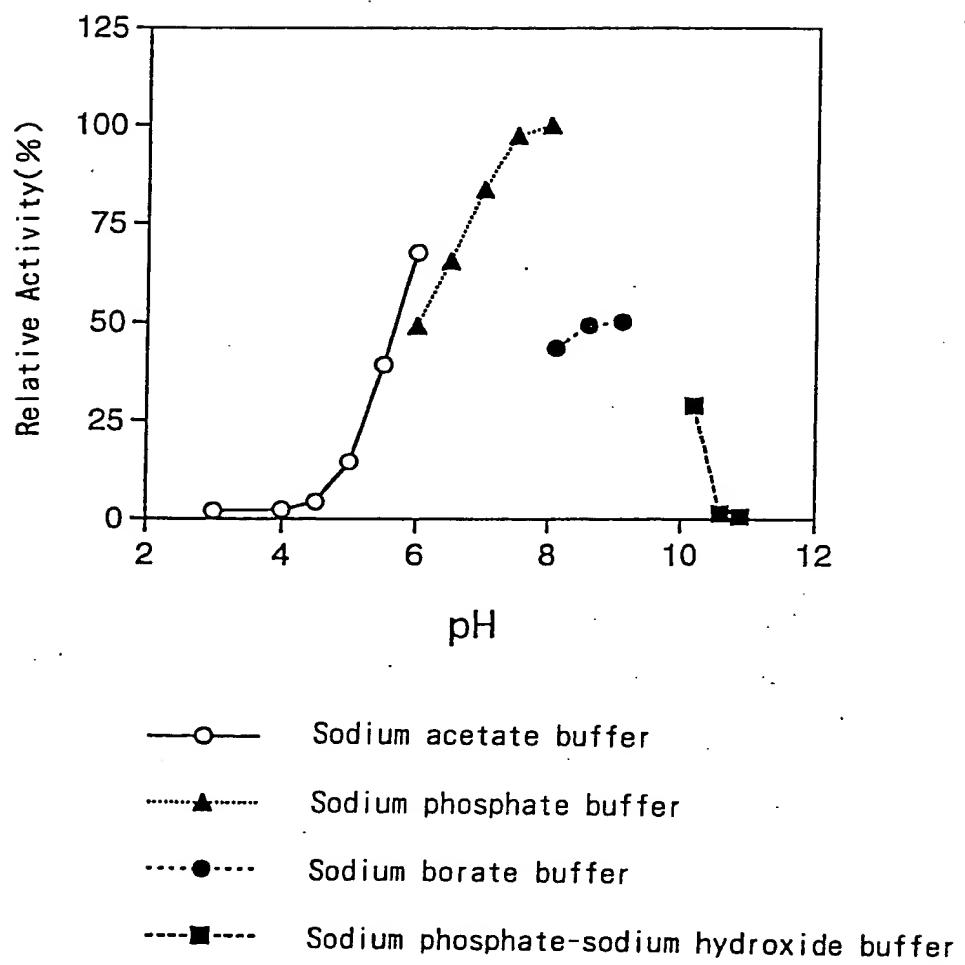


Fig. 20



F i g . 2 1

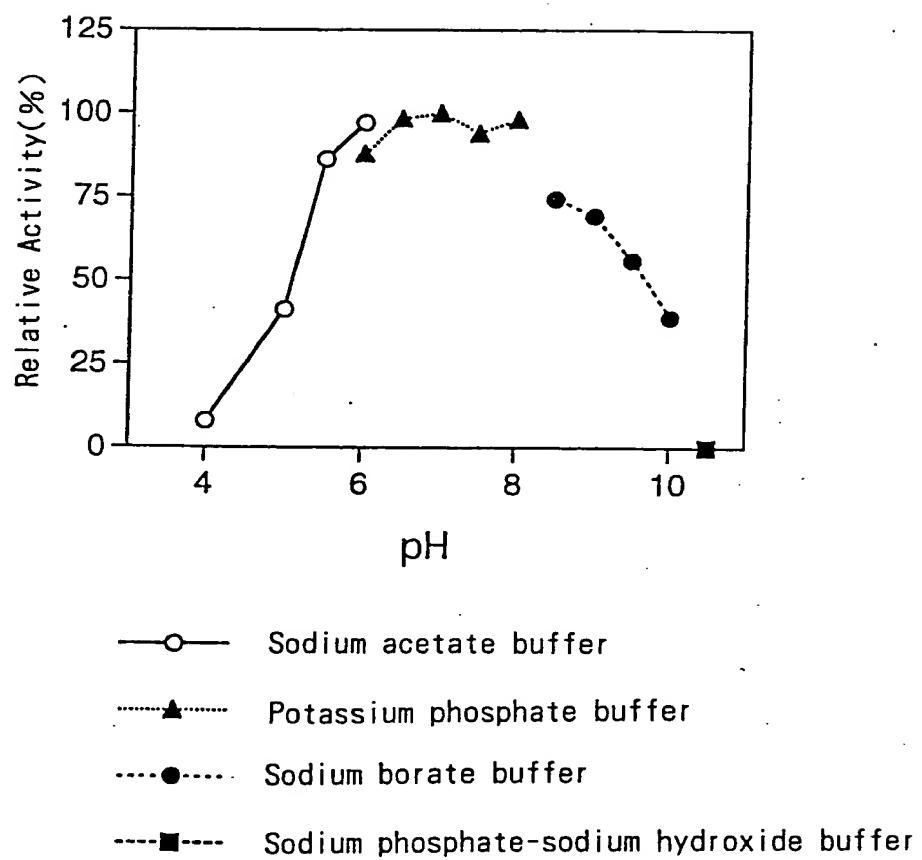


Fig. 22

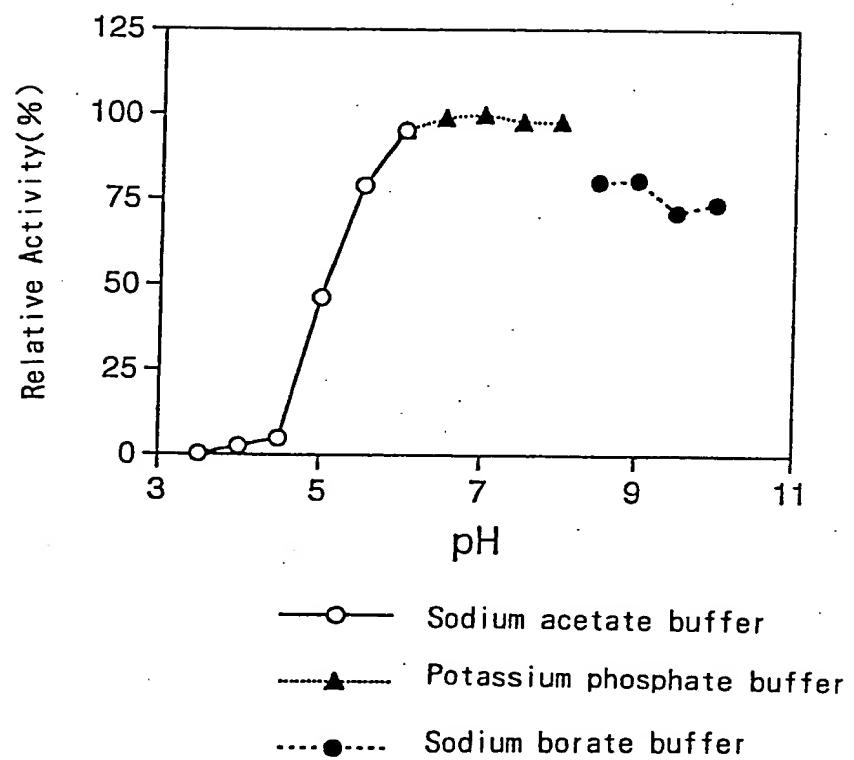


Fig. 23

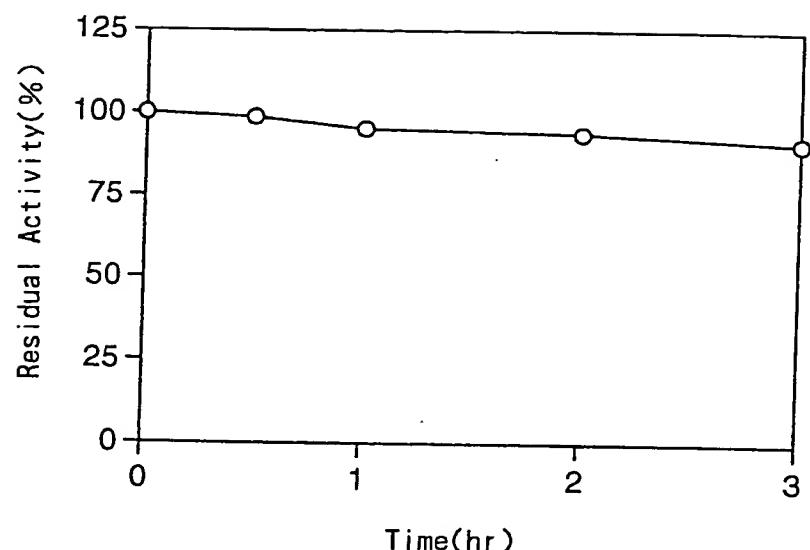


Fig. 24

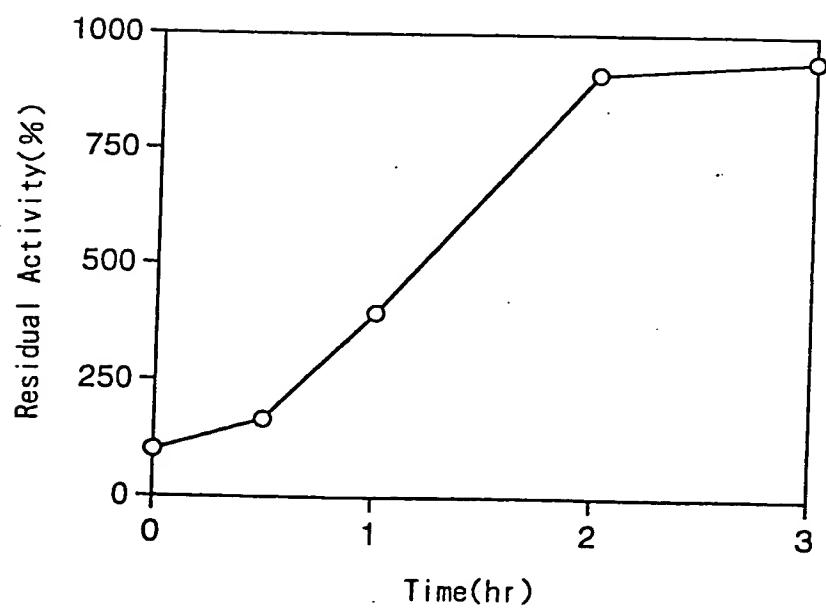


Fig. 25

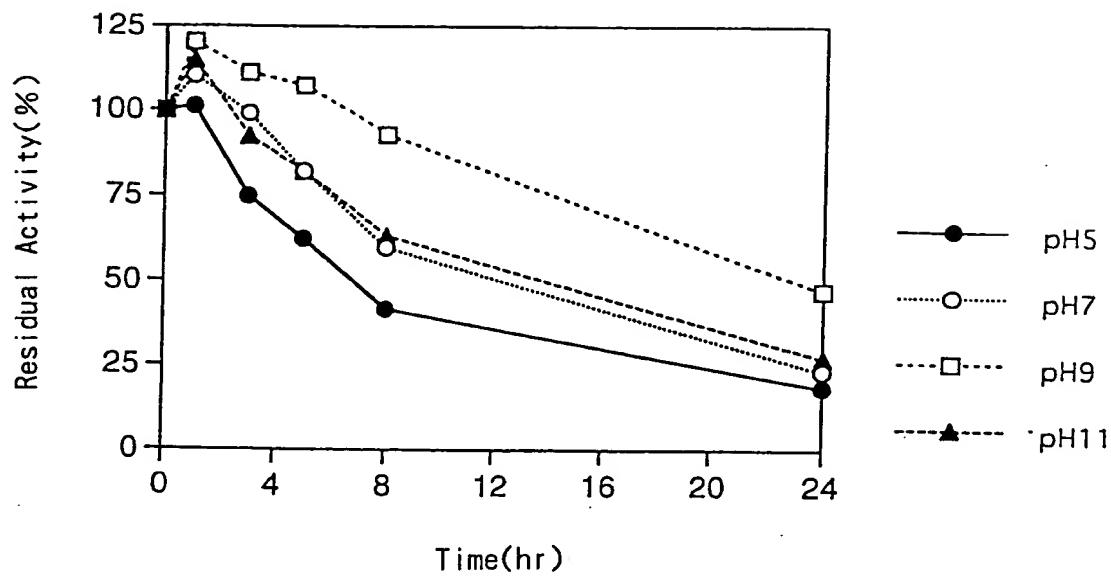


Fig. 26

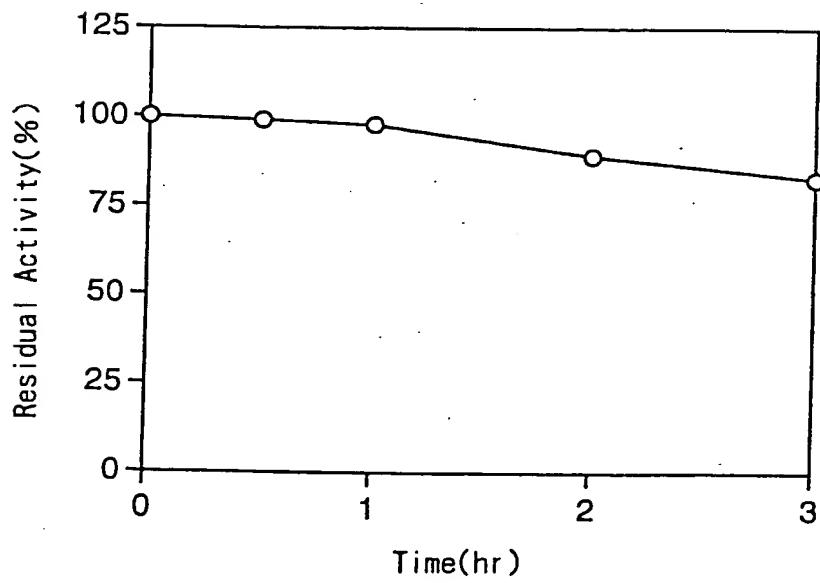


Fig. 27

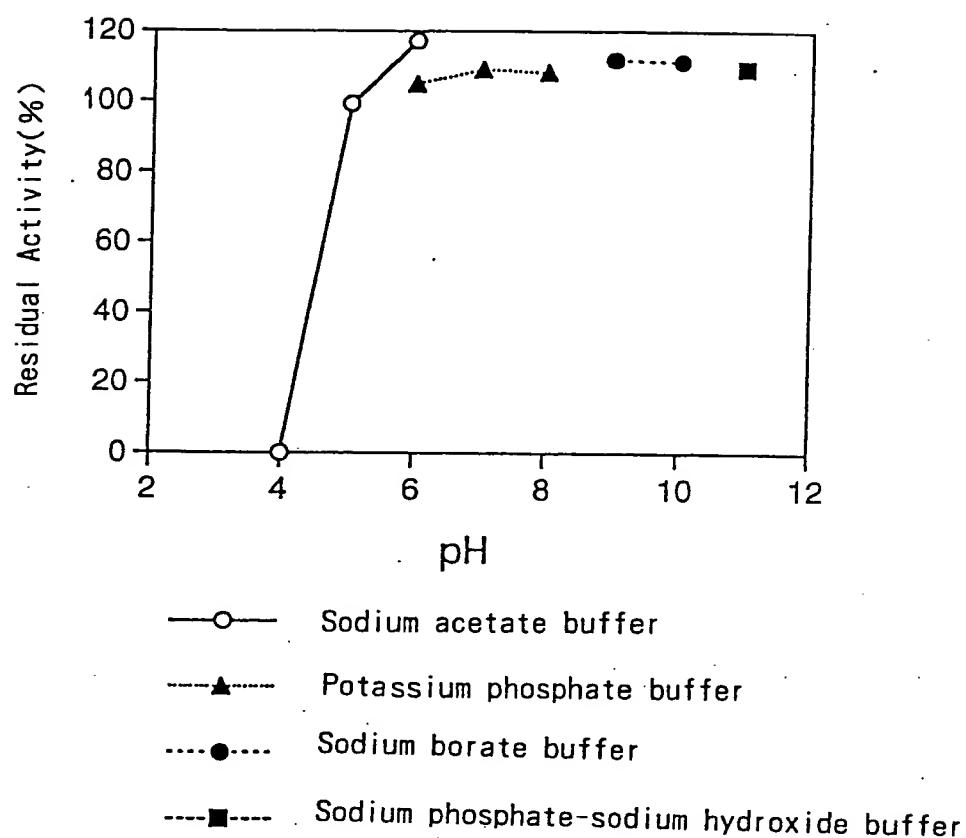


Fig. 28

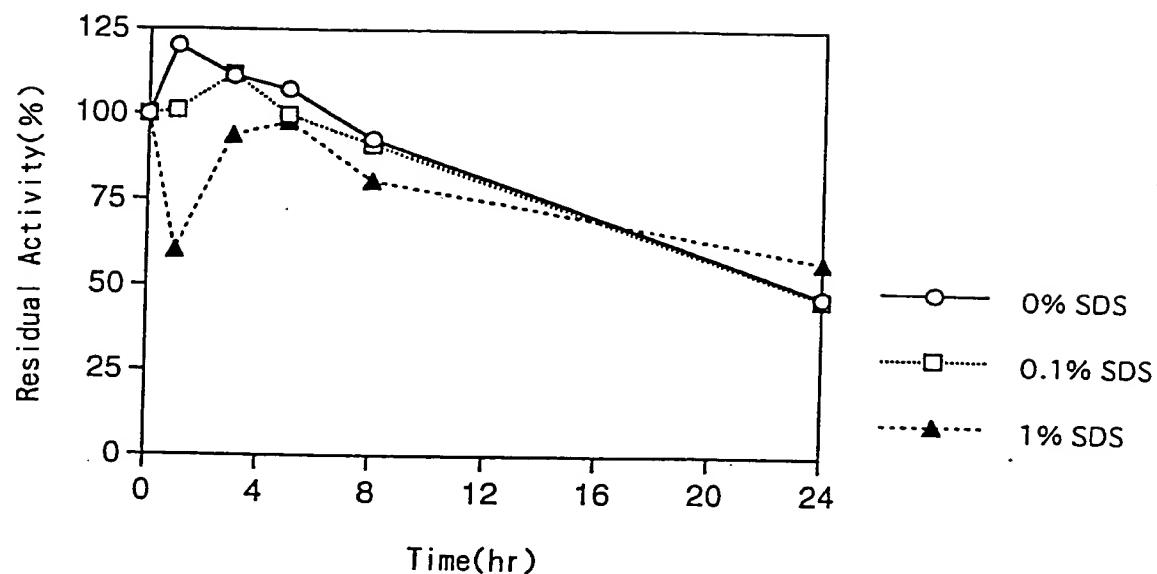
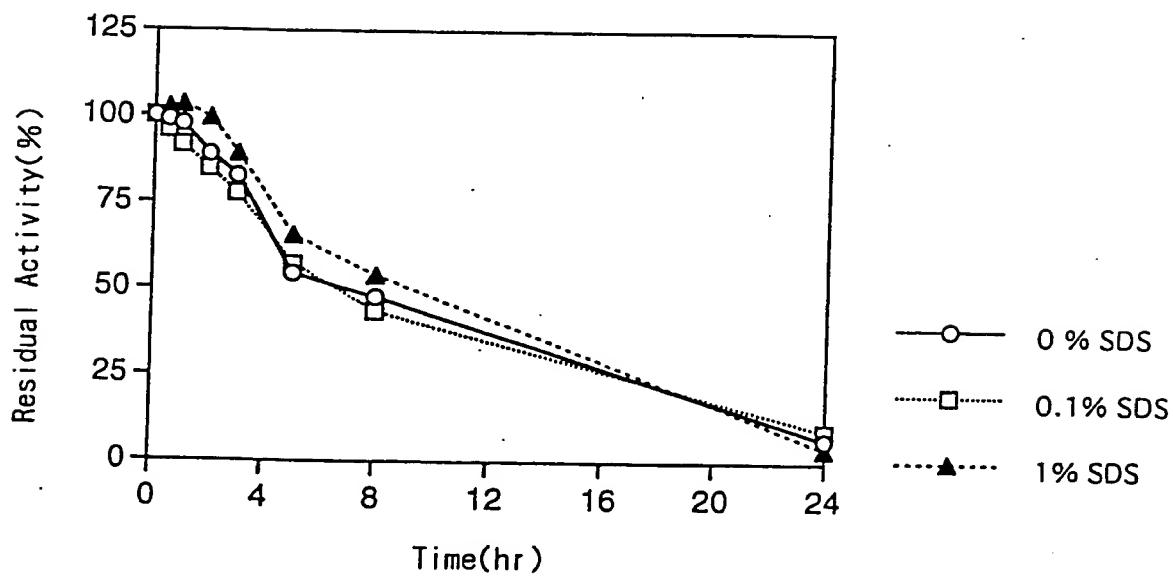


Fig. 29



F i g . 3 0

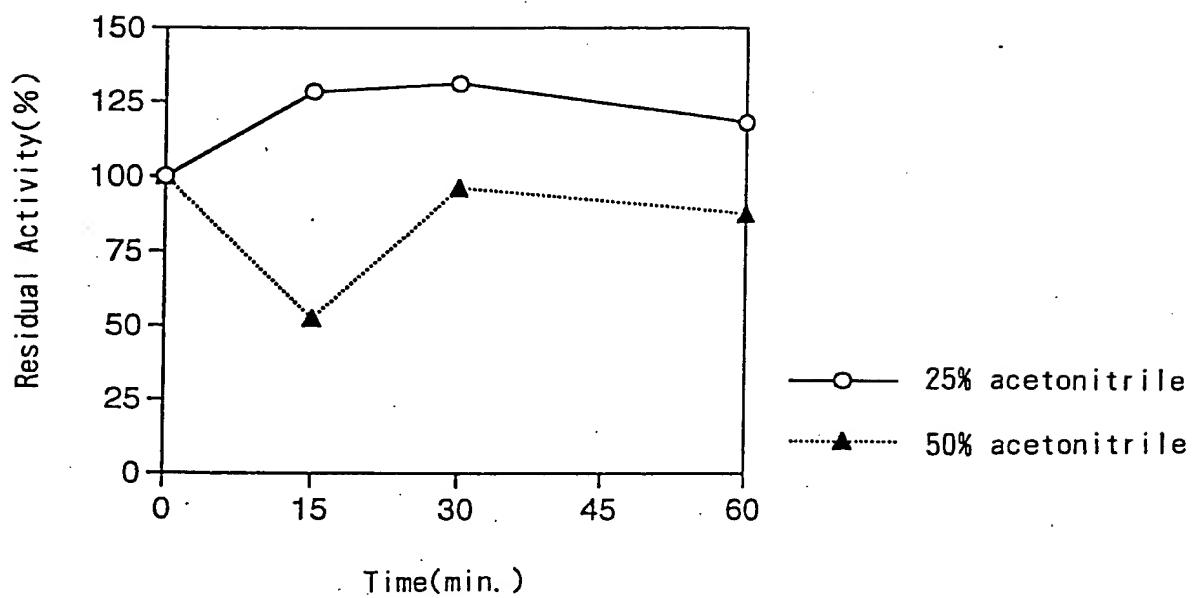


Fig. 31

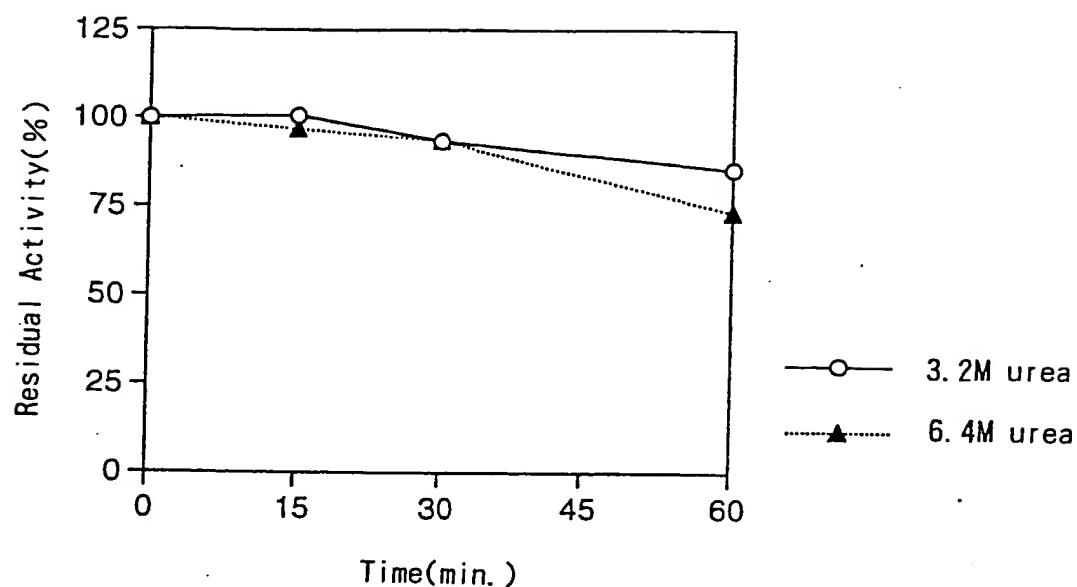


Fig. 32

